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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/018,339	12/19/2001	Hans-Peter Harz	13111-00039-US	1787

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EXAMINER	
HANLEY, SUSAN MARIE	
ART UNIT	**PAPER NUMBER**
1651	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/018,339	HARZ ET AL.	
	Examiner	Art Unit	
	Susan Hanley	1651	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *26 June 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-4,6,7,9-17 and 19-25* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,6,7,9-17 and 19-25* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

The amendment and response filed 6/26/07 are acknowledged.

Claims 1-4, 6, 7, 9-17 and 19-25 are presented for examination.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Terminal Disclaimer

The terminal disclaimer filed on 9/21/07 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of US Patent No. 7,186,533 has been reviewed and is accepted. The terminal disclaimer has been recorded.

Withdrawal of Objections and Rejections

The objections and rejection not explicitly restated below are withdrawn due to Applicant's response in the amendment filed 6/26/07.

New Grounds of Rejection

Applicant's arguments are considered to be moot in light of new grounds of rejection.

Claim Rejections - 35 USC § 112

Claims 26-28 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 26-28 are rejected because the phrase "at least one additive" is vague and indefinite. It is unclear what the basis for determining the metes and bound of "at least one additive" that could be anything.

Claims 11-14, 17, 19-23, 25, 27 and 28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Good et al. (US 4,689,297; cited in the IDS filed 10/23/06).

Good discloses a method of preparing a pelletized enzyme-containing particle by coating a hydratable core-particle with an enzyme and then a film-forming macro-molecular material. The initial coating is carried out by suspending the hydratable core particle in a fluidized bed dryer. This disclosure meets the limitations of the preamble of claim 11 because a particle that contains an enzyme is formed. Claims 11, 17 and 22 do not specify the exact nature of the structure of the granulate. A particle is interpreted to be a granulate (e.g., a small grain). The size of the granulate is 150 to 2,000 microns, as in instant claim 12. The second step provides for spraying an aqueous slurry of enzyme onto the enzyme-coated core particles to form a coated granulate that comprises an enzyme mixture with a core. The spraying temperature is 25 to 40 degrees C, as in instant claim 21 (col. 4, lines 57-60). Good discloses that the macro-molecular coating material is a water indispersible or water dispersible polymer including polyethylene glycols (MW 1,000 to 8,000), linear alcohol alkoxylate (MW 1,450 to 2,670), polyvinylpyrrolidone (MW 26,000 to 33,000) as in part (a), (b) and (c) of instant claims 11, 17 and 22, respectively. These polymers are disclosed with no additions or "fillers" as in instant claim 20. Good teaches that the enzyme can be hydrolases such as lipases or proteases, as in instant claims 13 and 14 (see Good, col. 3, lines 27-40). The coated granule can contain any number of additives, as enumerated by claim 2 of Good. Regarding the limitation of claims 11, 17 and 22, wherein the granulate, or the method of the preparing same, has a pelleting stability of greater than an uncoated granulate, it is noted that In re Best (195 USPQ 430) and In re Fitzgerald (205 USPQ 594) discuss the support of rejections wherein the prior art discloses subject matter which there is reason to believe inherently includes functions

that are newly cited or is identical to a product instantly claimed. In such a situation the burden is shifted to the applicants to "prove that subject matter shown to be in the prior art does not possess characteristic relied on" (205 USPQ 594, second column, first full paragraph). In the instant case, the method of making the coated granulate and the granulate produced therefrom, by Good, meet the claimed method steps (spraying an enzyme-containing particulate with certain polymers) or the structure that results from the execution of the method steps (an enzyme-containing particles that is coated by a polymer). Hence, one would reasonably expected that the coated granulates disclosed by Good would have the recited pelleting characteristics limitation.

Claims 1-4, 6, 7, 8, 11, 12-14, 17, and 19-28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Thoma et al. (Jan/1999; new reference).

Thoma discloses the stability of polymer aqueous coatings on the stability of enteric coated pellets and tablets. Pancreatin pellet cores were prepared by wet granulation of the enzyme and excipients, extrusion and subsequent spheronization, as in instant claims 2 and 3. The granulation technique is inferred by the disclosure on page 40, left col., 2nd full paragraph under "Materials" wherein the placebo tablets were manufactured in the same manner as the pancreatin tablets (e.g., wet granulation). The disclosure of pancreatin meets the limitations of instant claims 11, 13 and 14. The pellets were coated at 45, 55 or 75 degrees C, as in instant claim 21, with hydroxy methyl cellulose (Pharmacoat606®), providon, and other polymers with and without various additives such as plasticizers. This disclosure meets the limitations of instant claims 1, 6, 7, 9, 11, 17 and 19. The "without" is interpreted as having not filler, as in instant claim 20. Pancreatin activity was tested

after a period of 11 months. Thoma disclose that the were differences among the polymer coatings based on the addition of additives to the coating.

On the whole, Thoma provides an analysis of well known enteric coating polymers, including HMP-type polymers, and finds the pure polymers maintain granule stability while he addition of additives can compromise said stability. This disclosure meets the limitations of the preamble of claim 11 because a pellet that contains a uniformly distributed enzyme is formed. A pellet is interpreted to be a granulate (e.g., a small grain). The coated granule can contain any number of additives, as enumerated in the abstract. Regarding the limitation of claims 1, 11, 17 and 22, wherein the granulate, or the method of the preparing same, has a pelleting stability of greater than an uncoated granulate, it is noted that In re Best (195 USPQ 430) and In re Fitzgerald (205 USPQ 594) discuss the support of rejections wherein the prior art discloses subject matter which there is reason to believe inherently includes functions that are newly cited or is identical to a product instantly claimed. In such a situation the burden is shifted to the applicants to "prove that subject matter shown to be in the prior art does not possess characteristic relied on" (205 USPQ 594, second column, first full paragraph). In the instant case, the method of making the coated granulate and the coated granulate produced therefrom, by Thoma, meet the claimed method steps (granulating an enzyme-containing mixture to make a pellet and then coating said pellet with certain polymers) or the structure that results from the execution of the method steps (an enzyme-containing particles that is coated by a polymer). Hence, one would reasonably expected that the coated granulates disclosed by Thoma would have the recited pelleting characteristics limitations.

Claim Rejections - 35 USC § 103

Claims 1-4, 6, 7, 9-12, 16, 17, and 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. Itoh et al. (US 5,080,917; previously cited) in view of Good et al. (US 4,689,297) or Thoma et al. (Jan/1999).

Itoh et al. disclose a method of making coated granules for animal feed and granules thereof, as in claims 1, 11, 17, 22 (method), 24 and 25 (composition). The core may be solid and contain known binders such as PVP, hydroxypropyl cellulose or polyvinyl alcohol. This disclosure meets the limitation of a solid support. The core can also contain disintegants such as potato or corn starch and excipients such as lactose or mannitol (col. 4, lines 19-26). In the absence of a definition by the instant specification, an additive is interpreted to mean an ingredient other than an enzyme, water and solid support material. The method of making the granulate comprises combining a binder dissolved in a suitable solvent with a suitable active substance. In Example 5, Itoh et al. disclose that the solvent was aqueous ethanol. In Comparative Test 4, Itoh et al. teach that the binder was dissolved in water. These disclosures satisfy the limitation of water as an ingredient in the granulate, as in instant claims 1, 11, 17 and 22. The active substance can be an enzyme such as a protease, amino acids, vitamins, sugars such as glucose or antibiotics. Itoh et al. specifically state that, "The active substances may be used either alone or in combination and mixture" (col. 2, lines 44-50). The disclosure of vitamins meets the limitation of an "additive" as suggested by the instant specification on page 11. The enzyme-core granulate is prepared by conventional mechanical means which include centrifuge-fluidizing granulation (col. 4, line 68), as in instant claim 2. The granulation can produce spherical granules (col. 4, lines 52-55), as in instant claim 3. The granules are then dried to give a granulate having a diameter of about 1.4 to 3.2 mm

(col.5, lines 1-10), as in instant claim 12. The sequence of spherical granulation followed by drying is exemplified in Example 4, as required by instant claim 3.

The coating taught by Itoh et al. comprises a ethyl cellulose, a high molecular weight compound which is a polymer such as methacrylate and the water-insoluble substance (claim 1 of Itoh). The high molecular weight compound comprises copolymers formed from alkyl esters of methacrylic acid and dimethylaminoethyl methacrylate. The molecular weights of the copolymers are in the rang of 50,000 to 500,000 (col. 3, lines 1-10),. It is noted that the language of the instant claims is open and that the claimed coatings can comprise other substances. The coating solution has a solids (polymer) concentration of about 1 to 10%(w/w) which overlaps the claimed concentration of 10 to 40% by weight in instant claim 8. Polyethylene glycol can be added to the coating as a plasticizer (col. 4, lines 7-10). Itoh et al. disclose that the polymeric coating can be dispersed in a non-aqueous solution (see Ex. 2 where the coating is dissolved in ethanol and acetone), as in instant claim 6. The ratio of the coating to the granule core is at a weight ratio of 5-100 parts of the coating agent per 100 parts core (col. 4, lines 30-40). Thus, in a coated granule, the percent weight ratio of the coating agent is about 2.5 to 50%, as in claim 23. The diameter of the granule is in the range of 0.5 to 3.0 mm (col. 5, lines 1-10). Itoh et al. disclose examples for making coated granulates that are batch methods, as in instant claim 4.

Claim 20 is drawn to an organic polymer that is filler-free. According to the MPEP 2111, during patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d

319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (discussed below); Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). According to Webster's Dictionary a filler is defined as "something added to augment weight, size or space" (p. 487). The coating taught by Itoh et al. comprises a ethyl cellulose, a high molecular weight compound which is a polymer such as methacrylate and the water-insoluble substance (claim 1 of Itoh). The purpose of the water-insoluble compound is to form a stronger coating layer (col. 3, lines 36-46). Therefore, the limitation of instant claim 20 is met by Itoh because none of the components meet the definition of a filler.

Itoh et al. do not specifically exemplify an enzyme-containing granulate that is suitable for animal feed. Nor does Itoh specifically state that the organic-polymer-coated enzyme-containing granulate has a pelleting stability greater than uncoated enzyme-containing granules. Nor does Itoh et al. teach coating the enzyme granulate with any of polymer including polyethylene glycols (MW 1,000 to 8,000), linear alcohol alkoxylate (MW 1,450 to 2,670), polyvinylpyrrolidone (MW 26,000 to 33,000) or HMPC.

The disclosures by Good and Thoma are discussed *supra*. Both references are drawn to the employment of polymers to serve as coatings on enzyme-containing cores to protect said enzyme from the acid environment of the stomach as well as to preserve the biological agent during storage.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to make a coated enzyme-containing granulate wherein the coating comprises an organic polymer. The ordinary artisan would have been motivated to do so because Itoh et al. specifically suggest that the coated granulate contain a physiologically active substance which is an enzyme

such as a protease (col. 2, lines 49-50. The protease is a specie in a small genus of active substances taught by Itoh et al. (see col. 2, lines 43-55). Therefore, the ordinary artisan could easily envisage an enzyme-containing granulate that is coated by an organic polymer. The ordinary artisan would have had a reasonable expectation that he or she could make and use an enzyme-containing granulate coated by an organic polymer because Itoh et al. provide examples of making granulates with biologically active substances under conditions that the ordinary artisan would expect an enzyme to survive intact.

It would have been obvious to one of ordinary skill in the art at the time the invention was made that the organic-polymer-coated enzyme-containing granulate would have had a pelleting stability greater than uncoated enzyme-containing granules. As noted supra, the MPEP 2111, notes that during patent examination, the pending claims must be "given their broadest reasonable interpretation consistent with the specification." In re Hyatt, 211 F.3d 1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000). This means that the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In re Zletz, 893 F.2d 319, 321, 13 USPQ2d 1320, 1322 (Fed. Cir. 1989) (discussed below); Chef America, Inc. v. Lamb-Weston, Inc., 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). In the instant case, the specification does not provide as specific definition for "pelleting stability." Thus, "pelleting stability" is interpreted to mean the ability of the active substance in the coated granulate to maintain its activity after pelletizing of the granulate. It is noted that independent claims 1 and 22 do not actually have a pelleting step. Hence, the phrase "wherein the enzyme-containing granulate has a pelleting stability greater than uncoated granulates" refers to a property that is conferred to the granulates because of the coating process. It is noted on pages 20-21 of the specification that

one method of determining pelleting stability is to determine the activity of the enzyme after the granulate has been pelleted. However, the preferred embodiments of the specification are not read into the claims. "Pelleting stability" can be interpreted to mean the stability of the pellet in any type of situation (e.g., in the stomach of an animal or after storage).

Itoh et al. teaches that it is desirous to inhibit decomposition of a granulate in the first cow stomach in the digestive system in order to maintain the activity of the biologically active substance in the remaining cow stomachs. Thus, the disclosed coating protects the active substance in the granulate (col. 1, lines 1-31). Itoh et al. measured the stability afforded by the organic polymer coating by feeding cows granulates having a) no methionine; b) having methionine and uncoated; and c) having methionine and coated. The concentration of methionine in blood was determined. The results in Table 4 demonstrate that the granulates supplemented by the organic polymer coating were better able to survive the acidic digestive tract of the cow. Thus, Itoh performs that same process as the instant claims to make enzyme-containing granulates that are coated by an organic polymer. Itoh demonstrates that the organic polymer is directly responsible for preserving the activity of the amino acid contained in the coated granulate.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ coating the enzyme granulate with any of polymer including polyethylene glycols (MW 1,000 to 8,000), linear alcohol alkoxylate (MW 1,450 to 2,670), polyvinylpyrrolidone (MW 26,000 to 33,000) or HMPC. The ordinary artisan would have been motivated to do so the polymers disclosed by Good and are drawn to the same purpose for coating granules in the instant invention. That is, in the absence of unexpected results, the employment of protective polymers to serve as

coatings on enzyme-containing cores to protect said enzyme from the acid environment of the stomach as well as to preserve the biological agent during storage are well known in the art.

Claims 1-4, 6, 7, 9-17, and 19-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Itoh et al. (US 5,080,917) in view of Good et al. (US 4,689,297) or Thoma et al. (Jan/1999), as applied to claims 1-4, 6, 7, 9-12, 16, 17, and 19-28, in further view of De Lima et al. (US 6,136,772, previously cited).

The combined disclosure of Itoh and Good or Thoma are discussed supra. None of the combined disclosure teach that the granule contains a phytase.

De Lima et al. disclose coated enzyme-containing granules and a method of making thereof. The product can be used for animal feed or detergent (col. 16, lines 33-49), as in claim 17 and 18. The enzyme can be a phytase, a protease, a transferase or a carbohydrase (col. 15, lines 1-68 and col. 16, lines 46-48), as in claims13-14 . The granular core particles can be prepared by conventional means including granulation, pelletization , extrudation and spheroidization (col. 10, lines 57-65), as in claims 1-4. The enzyme-starch granulate can be coated by spraying the coating material onto the surface of the granulate in a fluidized bed, as in claim 6. De Lima et al. disclose that the coating can comprise polyethylene glycol). In Example 26, De Lima et al. related that cassava cores were sprayed with a phytase solution, mixed and dried in a fluidized bed. The activity of the phytase after dilution but before combination with the starch core was 10,700 FYT/g, as in claims 15-16. De Lima et al. disclose that other coatings are available and suitable for all enzyme/starch granulates.

It would have been obvious to one ordinary skill in the art to make a coated phytase-containing granulate as taught by the combined references. The ordinary artisan would have been motivated to do so because it was recognized by DeLima and Itoh that the stabilization of

biologically active substances by coating granules containing the same is important for long term stability, especially in feeds. The ordinary artisan would have realized that the method of making such a coated granulate by the combined references is a design alternative that is very similar to the method of DeLima.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Susan Hanley whose telephone number is 571-272-2508. The examiner can normally be reached on M-F 9:00-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Wityshyn can be reached on 571-272-0926. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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